

Friday, December 09, 2016 9:13:56 AM

154347

Page 1

Item ID: 644.4117

Accept

N900040100

Setup Start *NS1*

Revision ID:

Item Name: Bracket, Fwd Pivot

Stop *NS2*

Start Date: 12/23/2016 **Start Qty:** 7.00

7

Cust Item ID:

Required Date: 12/23/2016 **Req'd Qty:** 7.00

7

Customer:

Reference:

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:**

QC: **Date:** **SPC (Y/N):** **Date:**

Run Start *NR1*

Stop *NR2*

[illegible]

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="width:15%;">Skid-tube ☐</td> <td style="width:15%;">Cross tube ☐</td> <td style="width:15%;">Water Jet ☐</td> <td style="width:15%;">Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐																						
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Large Fab ☐	Composite ☐	Supplier ☐																							
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																		
Description Work Order Deviation				Disposition																					
3AG 3A 3-1-16																									

Root Cause				FAULT CATEGORY			
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐		
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐		
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐		
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐		
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐		
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐		
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐		
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐		
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐		
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐		
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :					
Misidentified ☐	Past Due ☐						

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Page 2

Accept

Setup Start *NS1*

Stop *NS2*

Cust Item ID:

Customer:

Customer:

Reference:

Run Start *NR1*

Stop ***NR2***

**Insp.
Stamp**

0.00

0.02

0.02

Quality Control

0.03

0.02

Memo

Brake NC

0.00

Memo

QC

Quality Control

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☒

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Work Order ID 154347

Friday, December 09, 2016 9:13:56 AM

154347

Page 3

Item ID: 644.4117

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Bracket, Fwd Pivot

Start Date: 12/23/2016 Start Qty: 7.00 ***7***

Cust Item ID:

Required Date: 12/23/2016 Req'd Qty: 7.00 ***7***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

150

Outsource process-Anodize per QSI017 4.1.10.1

0.00

150

Outsource4

Memo

84.00

Issue P/O to ATG : 34919

1- Black Anodize as per Dwg, see note 4.

Certification of Conformity is required

7 JAN 12 2017 DAS 13 9-59

160

Receive & Inspect for Damage & Mat'l Certs

0.00

160

Packaging

Memo

0.02

Packaging

7x SP17-01-17

170

QC5- Inspect part completeness to step on W/O

0.00

170

QC

Memo

0.02

Quality Control

7 JAN 17 2017 DAS 38 9-59

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
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Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____			
Misidentified ☐	Past Due ☐				

Work Order ID 154347

Friday, December 09, 2016 9:13:56 AM

154347

Page 4

Item ID: 644.4117

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Bracket, Fwd Pivot

Start Date: 12/23/2016 Start Qty: 7.00

7

Cust Item ID:

Required Date: 12/23/2016 Req'd Qty: 7.00

7

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

180

Spray Painting per QSI005 4.2

0.00

180

SprayPaint

Memo

0.23

1- PRIME AS PER DWG SEE NOTE 4 AND MPP-172

BATCH: 135929

2- PAINT AS PER DWG, SEE NOTE 4 AND MPP-172

BATCH: 136434717-02-06**P.T.O.**

190

QC14- Inspect Spray Paint

0.00

190

QC

Memo

0.02

738
9-89

FEB 07 2017

P.T.O.

Quality Control

200

Identify as per dwg & Stock Location: _____

0.00

200

Packaging

Memo

0.02

7

FEB 07 2017

Packaging

DAS
9-89

DQA: AWA Date: 2017-04-05



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: AWA Date: APR 01 2017

Work Order update only ☐

Work Order: <u>154347</u> Part No. <u>644.4117</u> NCR No. <u>17-6338</u>		DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Cross tube ☒ Water Jet ☐ Engineering ☐ Machining ☐ Small Fab ☐ Prod. Eng. Coord. ☐ Quality ☐ Thermoforming ☐ Finishing ☐ Rec/Store/Packaging ☐ Other ☐ Large Fab ☐ Composite ☐ Supplier ☐					
Date: <u>17.01.30</u>		Step #: <u>130</u>		QTY Effective: <u>①</u>			MRB (QSI042) Approval DAS 9 17.01.30		
Description Work Order Deviation				Disposition					
excessive runs found in point R.C. process .0.79				- strip paint - Re paint * make sure anodize is not damage before painting painting* Primer # 136429 Paint # 136434				Completed By 41.15 8-00-00 17-3-13 DAS 38 9-89 Lead hand / Supervisor Approval Verification DAS 38 9-89 FEB 07 2017	
Root Cause Environment ☐ No Re-verification ☐ Design ☐ Operator ☐ Doc/Data ☐ Offset/Setup ☐ Equip/Tooling ☐ Supplier ☐ Handling/Pre ☐ Training ☐ Material ☐ Use for Testing ☐ Internal Transport ☐ Poor Information ☐ Tribal Knowledge ☐ Rushing ☐ LOA ☐ Product Improvement ☐ Substation ☐ Process Improvement ☐ Past Expiry Date ☐ ☒ Manufacturing Process Misidentified ☐ Past Due ☐				FAULT CATEGORY Pressure/Forced ☐ Temperature/Cure ☐ Power Loss/Surge ☐ Positioned Wrong ☐ Bending ☐ Set-up ☐ Folio/Program ☐ Outside Dimensions ☐ Centre Not Concentric ☐ BOM/Route ☐ Grain ☐ Over/Under tolerance ☐ Cracks ☐ Broken/Damage/Defect ☐ Weld ☐ Part Incorrect ☐ Crimp/Kink/Ripple/Wave ☐ Inspection Incomplete/Unqualified ☐ Wrong Stock Pulled ☐ Part Lost/Missing ☐ Cuffs ☐ Contamination ☐ Out of Sequence ☐ Part Moved ☐ Crushing ☐ Countersink ☐ Off-set ☐ Drawing ☐ Heat Treat ☐ Cut Too Short ☐ Mislabeled ☐ ☒ Finish Wave/Twist in Tube ☐ Instructions Incomplete/Unclear ☐ Fit/Function ☐ Misread ☐ Marks/Chatter ☐ Drill Holes ☐ Misaligned/off center ☐ Turning Sequence ☐				OTHER :	

Work Order ID 154347

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Page 5

Item ID: 644.4117

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N900040100

Setup Start

NS1

Revision ID:

Item Name: Bracket, Fwd Pivot

Stop

NS2

Start Date: 12/23/2016 Start Qty: 7.00

7

Cust Item ID:

Required Date: 12/23/2016 Req'd Qty: 7.00

7

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210

QC21- Final Inspection - Work Order Release

0.00

210

QC

Memo

0.12

Quality Control

DAS
21
9-89

FEB 07 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Picklist Print

Friday, December 09, 2016 9:13:59 AM

Page 1

Work Order ID: 154347

154347

Parent Item: 644.4117

644 4117

Parent Item Name: Bracket, Fwd Pivot

Start Date: 12/23/2016

Required Date: 12/23/2016

Start Qty: 7.00

Required Qty: 7.00

Comments: IPP REV:A 16.12.07 NEW ISSUE DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M2024T3S.125		Purchased	No				sf	8.7000		4.907368			
M2024T3S 125													
2024-T3 .125 sheet													

**DAS
46
9-89**

16/12/20

Location

Loc Qty

Loc Code

MAT021

8.7

M127668

8.7

M136430

4.1

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐																						
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																						
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																						
Large Fab ☐	Composite ☐	Supplier ☐																							
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval																		
Description Work Order Deviation				Disposition																					
								Completed By																	
								Lead hand / Supervisor Approval Verification																	
								QC / QA Coordinator Approval																	
Root Cause		FAULT CATEGORY																							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐	OTHER : _____																			

APICAL

INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO. 04489

SHEET 1 OF 1

DWG NO. 644.4100

REV: F

PREPARED BY:

J. BECKER

DATE: 04/08/14

EFFECT ON DWG
☐ INC. ☒ UNINC.

DWG TITLE: PIVOT STEP ASSY

APPROVED BY:

ENGR

MFG

QC

EFF:

NEXT ORDER

TRANSACTION
A-ADD
R-REVISE

CODES (TC):
C-CREATE
D-DELETE

REASON: UPDATE NOTE 4, FINISH SPECIFICATION.

NOTES:

1. IDENTIFY ALL PARTS IN ACCORDANCE WITH MPP-120
2. MATERIAL: 2024-T3 ALUMINUM
3. MATERIAL: 6061-T6 ALUMINUM
4. FINISH IAW MPP-172 SECTION 2.1, SECTION 3.1, SECTION 4.1, SECTION 5.2.
5. MATERIAL: MDS-FILLED NYLON 6/6 SHEET, CUT OD CIRCLE USING 2" GASKET PUNCH, CUT ID HOLE USING 1/4" GASKET PUNCH
6. MATERIAL: MDS-FILLED NYLON 6/6 SHEET, CUT OD CIRCLE USING 2" GASKET PUNCH, CUT ID HOLE USING 5/16" GASKET PUNCH
7. DIMENSION VALUE HAS FINISH COATING OF 6-10 MIL (.006-.010) TAKEN INTO CONSIDERATION
8. ADD ADDITIONAL WASHER UNDERNEATH CASTLE NUTS IF NECESSARY.
9. FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III CLASS 2, COLOR BLACK.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 154347 MWS

16-12-09

SHEET 1, NOTES IS:

DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRUC ☐ ICA ☐ BOM

CHANGE CATEGORY
☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED
☐ YES ☒ NO

APICAL

INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO.

04286

SHEET 1 OF 1

DWG NO. 644.4100

REV: F

PREPARED BY J. SOTO

DATE: 12/04/2013

EFFECT ON DWG
☐ INC. ☒ UNINC.

DWG TITLE: PIVOT STEP ASSY

APPROVED BY:

ENGR *[Signature]*

MFG

[Signature]

QC

[Signature]

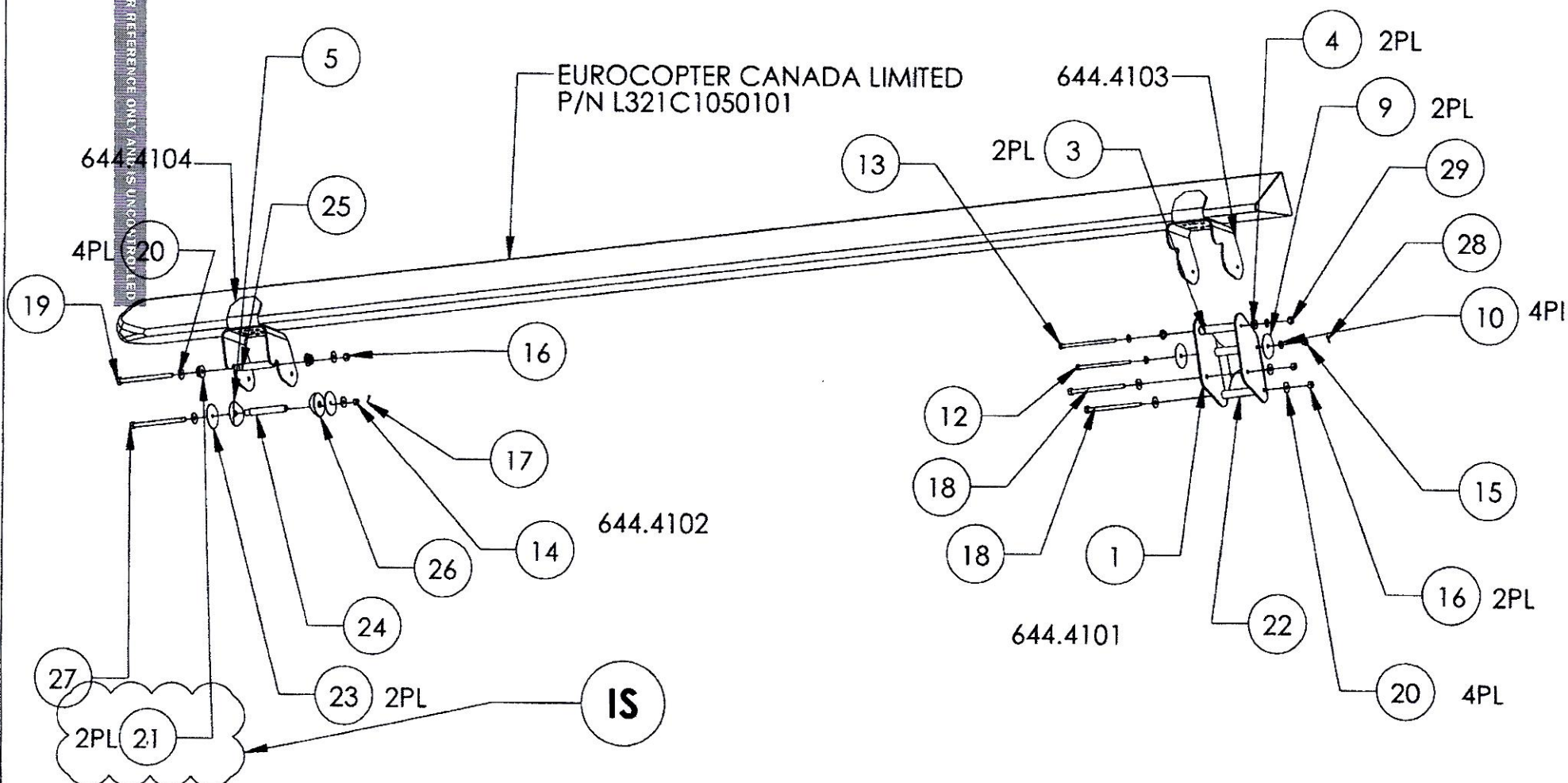
EFF. NEXT ORDER

TRANSACTION CODES (TC):
A-ADD
R-REVISE
C-CREATE
D-DELETE

REASON: REVISED F/N CALL OUT FROM 22 TO 21

ECR: 13-151

SHEET 1, ZONE D1 IS:



DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRUCTIONS ☐ ICA ☐ FMS ☐ BOM

CHANGE CATEGORY

☐ MAJOR ☒ MINOR

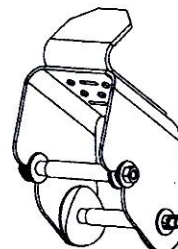
DER REVIEW REQUIRED

☐ YES ☒ NO

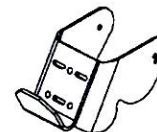
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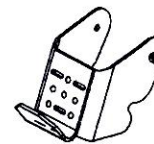
644.4101



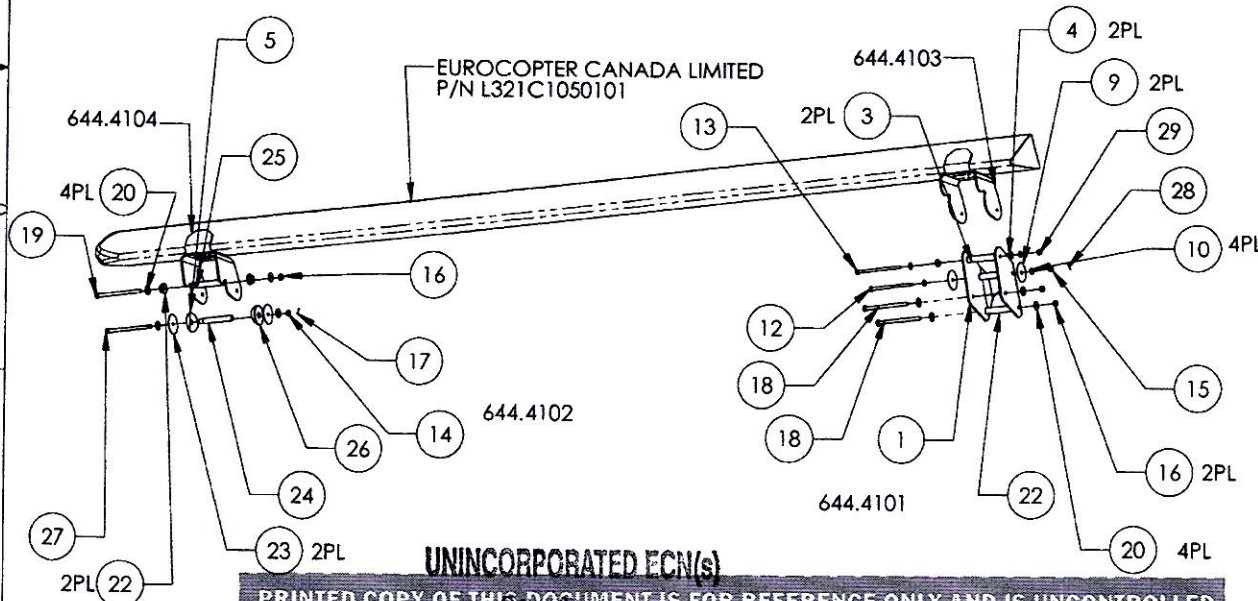
644.4102



644,4103



644.4104



UNINCORPORATED ECN(s)

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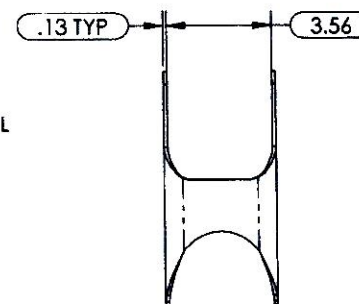
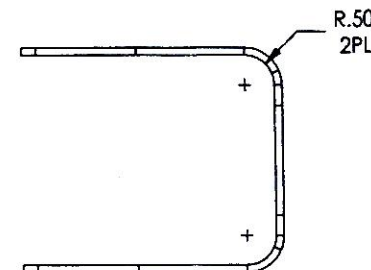
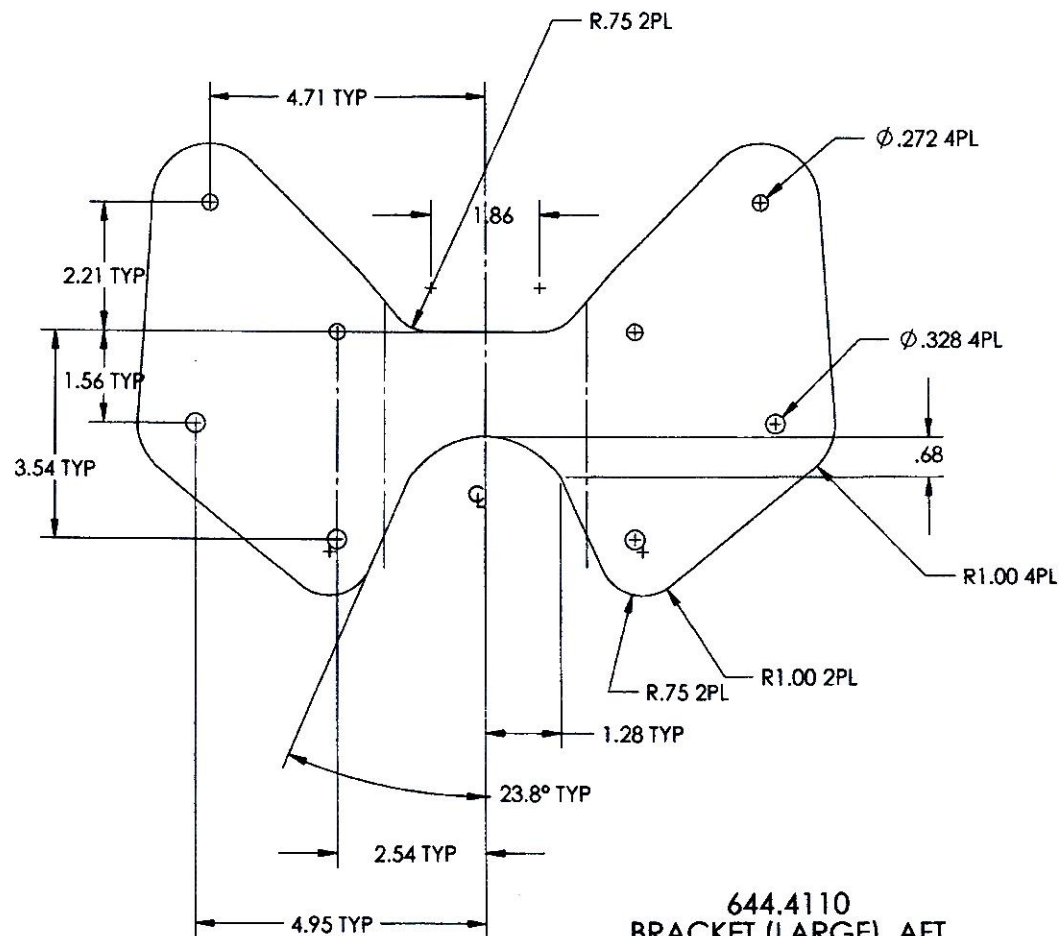
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INCORPORATED ECH 01310, 01322, 01332, & 01357.	11-29-66	S. JOSEPH
B	INCORPORATED ECH 01310, 01418, 01796 & 01808.	05-21-67	P. BRAVO
C	INCORPORATED ECH 01908, 07536, 63022	12-16-10	P. BRAVO
D	INCORPORATED ECH 03111, 03113, 03708, & 03740.	12-10-12	P. BRAVO
E	INCORPORATED ECH 03941	06-18-13	P. BRAVO
F	INCORPORATED ECH 40036	7-29-13	P. BRAVO

		1	29	601.3273	LOCKNUT FULL	MS21044N4
		1	28	601.2640	COTTER PIN	MS24665-132
	1		27	601.2328	BOLT, HEX	ANS-45
	1		26	644.4124	WASHER, PIVOT	△△
	1		25	644.4123	FWD CROSSTUBE BUSHING	△△
	1		24	644.4122	FWD CROSSTUBE BUSHING	△△
	2		23	644.4121	WASHER, NYLON	△
	1		22	644.4120	SPACER, CROSS-TUBE	△△
	2		21	644.4119	SPACER, FWD STOP	△△
	4	4	20	601.2110	WASHER, FLAT THICK	NAS1149C 05038
	1		19	601.2250	BOLT, HEX	ANS-50
		2	18	601.2249	BOLT, HEX	ANS-43A
	1		17	601.3315	COTTER PIN	MS24665-210
	1	2	16	601.3272	LOCKNUT FULL	MS21044N5
		1	15	601.1435	NUT, HEX CASTLE FULL	AN310-4
	1		14	601.3270	NUT, HEX CASTLE FULL	AN310-5
		1	13	601.3407	BOLT, HEX	AN4-47A
		1	12	601.2434	BOLT, HEX	AN4-45
6	3		11	601.2326	RIVET, COUNTERSUNK	MS20426AD5-8
		4	10	601.0863	WASHER, THICK	NAS1149C 04636
		2	9	644.4118	WASHER, NYLON	△△
1			8	644.4117	BRACKET, FWD PIVOT	△△
1			7	644.4116	BRACKET (SMALL), FWD	△△
	1		6	644.4115	BRACKET (SMALL), AFT	△△
	1		5	644.4114	WASHER, PIVOT	△△
		2	4	644.4113	SPACER, STOP	△△
		2	3	644.4112	SPACER	△△
	1		2	644.4111	BRACKET, AFT PIVOT	△△
		1	1	644.4110	BRACKET (LARGE), AFT	△△

[illegible]

4104410341021012	FIN#	PART #	DESCRIPTION	MATL	SPEC.
QTY			PARTS LIST		
NEXT ASSY (S)			APICAL INDUSTRIES		
644.1800			2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760) 724-5233		
ORIGINAL DATE 06-01-05			PIVOT STEP ASSY		
DESIGNED BY J. CROCKEY					
CUP/INCHES 1.5000					
DRAWING APPROVAL 3.0000 08-29-05					
CONTRACT NO.					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ± .03 3 PLACE DECIMALS ± .003 ANGLES ± .5					
SEE B	CAGE CODE 074M	DWG NO. 644.1800	REV F		
SCALE: NONE			SHEET 1 OF 1		

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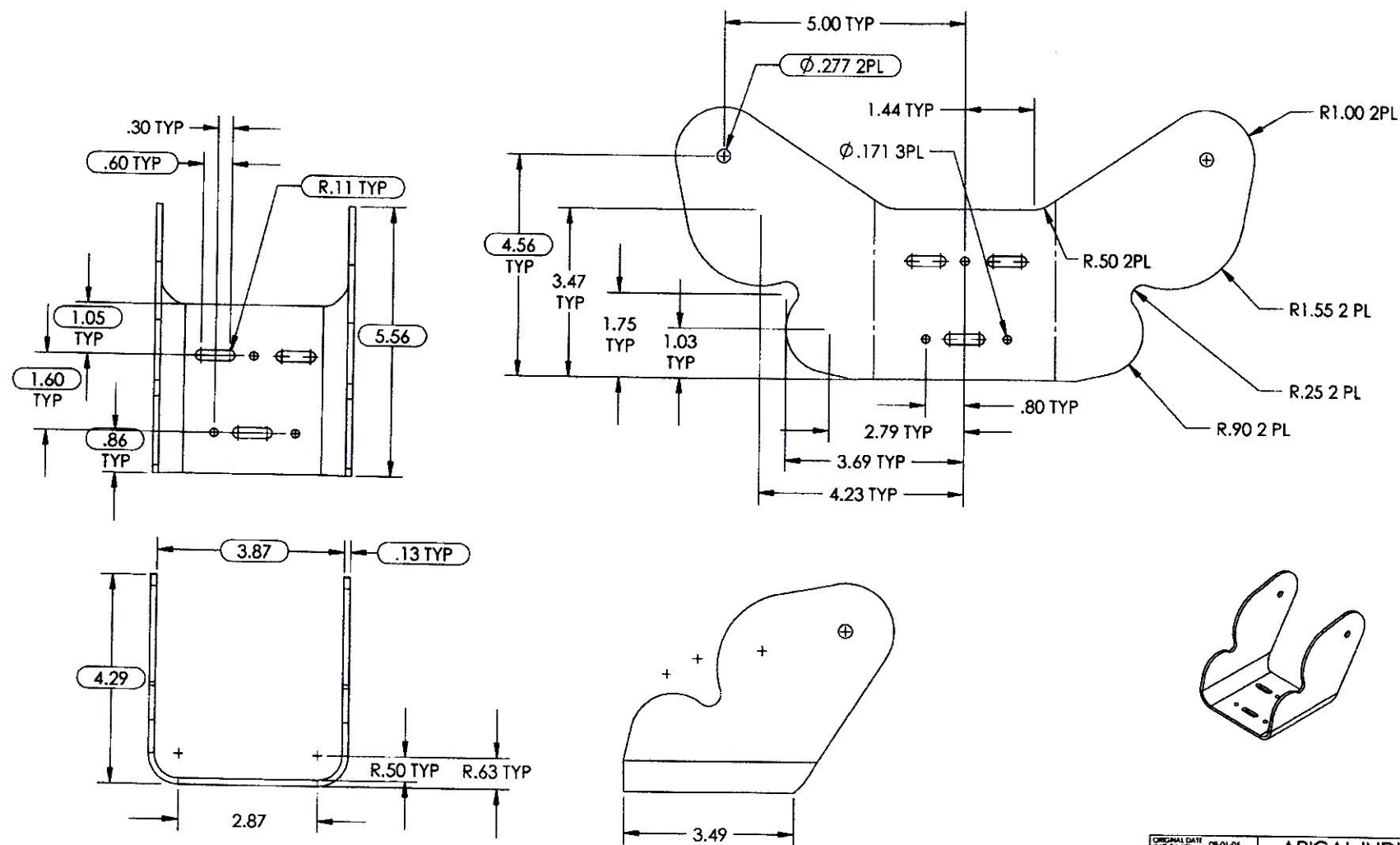


644.4110
BRACKET (LARGE), AFT

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ORIGINAL DATE 05-01-05	APICAL INDUSTRIES
DRAWN BY J. JOSEPH	2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300
CHECKED BY J. JOSEPH	PIVOT STEP ASSY
CONTRACT NO.	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 1 PLACE DECIMALS ±.05 2 PLACE DECIMALS ±.010 3 PLACE DECIMALS ±.005 ANGLES ±.5°	SEE CAGE CODE B 07NA26
	DWG. NO. 644.4100
	SCALE NONE
	SHEET 2 OF 16

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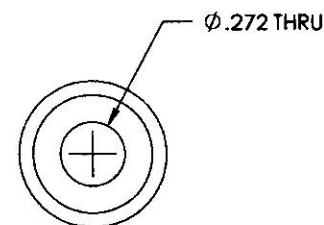
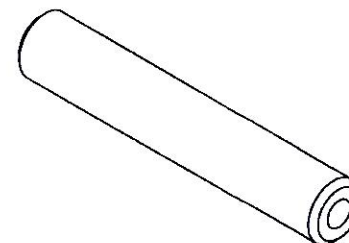
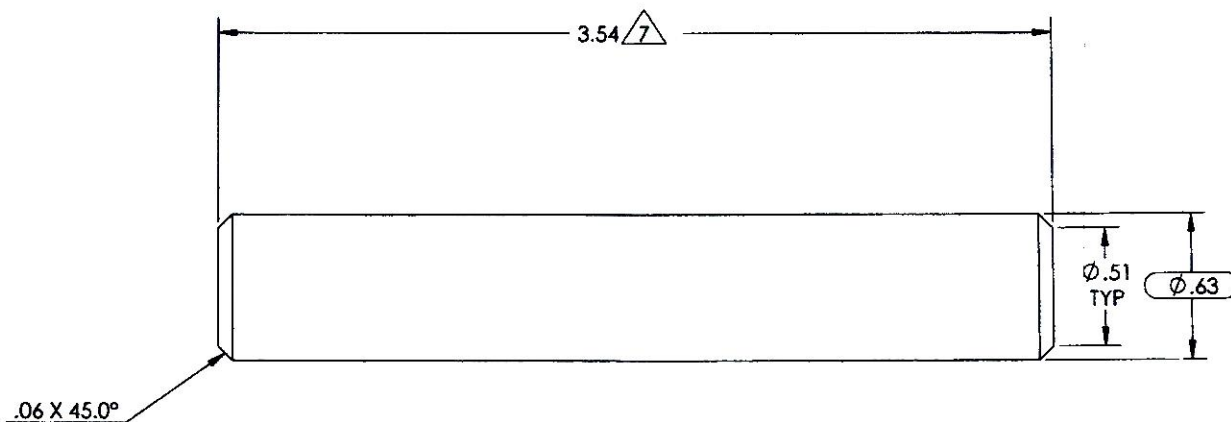


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BRACKET, AFT PIVOT

ORIGINAL DATE JAC 04-17-05	05-01-05	APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA 92056-3512 (760) 724-5300		
DESIGNED BY J. LAURICOT	PROJECT J. LAURICOT			
DRAWING APPROVAL J. LAURICOT 08-27-05		PIVOT TEST ASSY		
CONTRACT NO.				
1. MEETS CUSTOMER SPECIFICATIONS 2. PARTS ARE IN STOCK 3. PARTS LISTED IN BOM 4. ANGLES = 3°		SER. B CAGE CODE 07ALM2E	DWG. NO. 644.4100	REV. F
		SHEET 3 OF 14		

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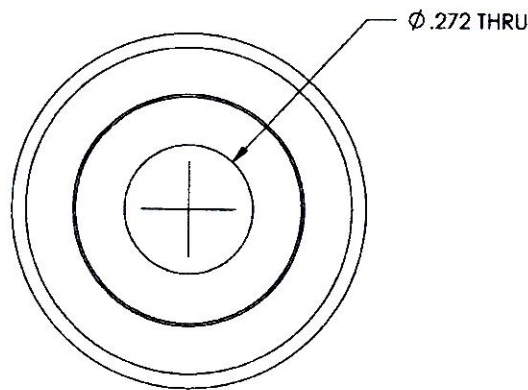
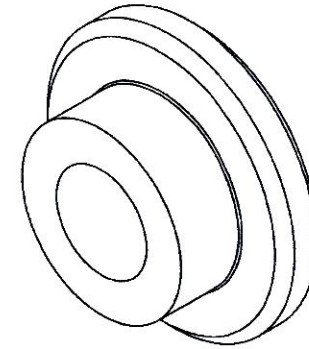
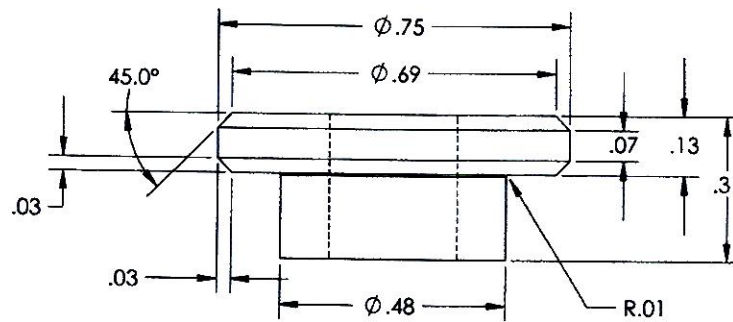


644.4112
SPACER

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ORIGINAL DATE: 09-01-05		APICAL INDUSTRIES	
DRAWN BY: D. PAERDT		2608 TEMPLE HEIGHTS DR.	
CHECKED: S. JOSEPH		OCEANSIDE, CA 92056-3512 (760)724 5300	
DRAWING APPROVAL: S. JOSEPH 09-29-05		PIVOT STEP ASSY	
CONTRACT NO.		REV. F	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 1 PLACE DECIMALS ± .01 2 PLACE DECIMALS ± .005 3 PLACE DECIMALS ± .001 ANGLES ± .5°		SER. B	CAGE CODE 07AM26
SCALE: NONE		DWG. NO. 644.4100	
		SHEET 4 OF 16	

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SPACER, STOP

ORIGINAL DATE 08-01-05		APICAL INDUSTRIES	
DRAWN BY D. PARROT		2608 TEMPLE HEIGHTS DR.	
DRAWING APPROVAL E. JOSEPH 08-01-05		OCEANSIDE, CA. 92056-3512 (760)724-5300	
CONTRACT NO.		PIVOT STEP ASSY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS $\pm .02$ 3 PLACE DECIMALS $\pm .010$ ANGLES $\pm .5^\circ$		SER B	REV F
SCALE NONE		DWG NO 644.4100	
		SHEET 5 OF 16	

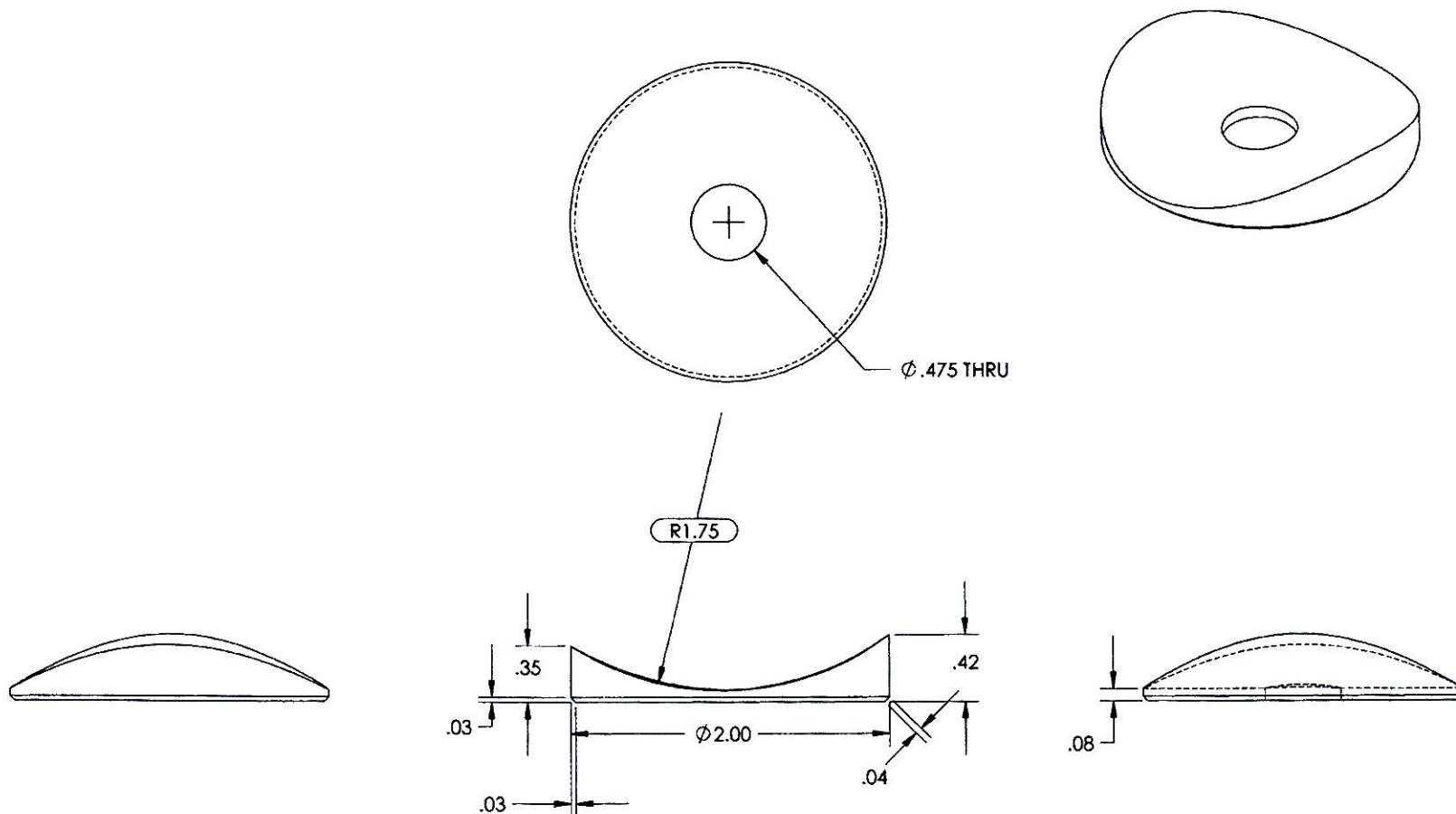
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A

B

C

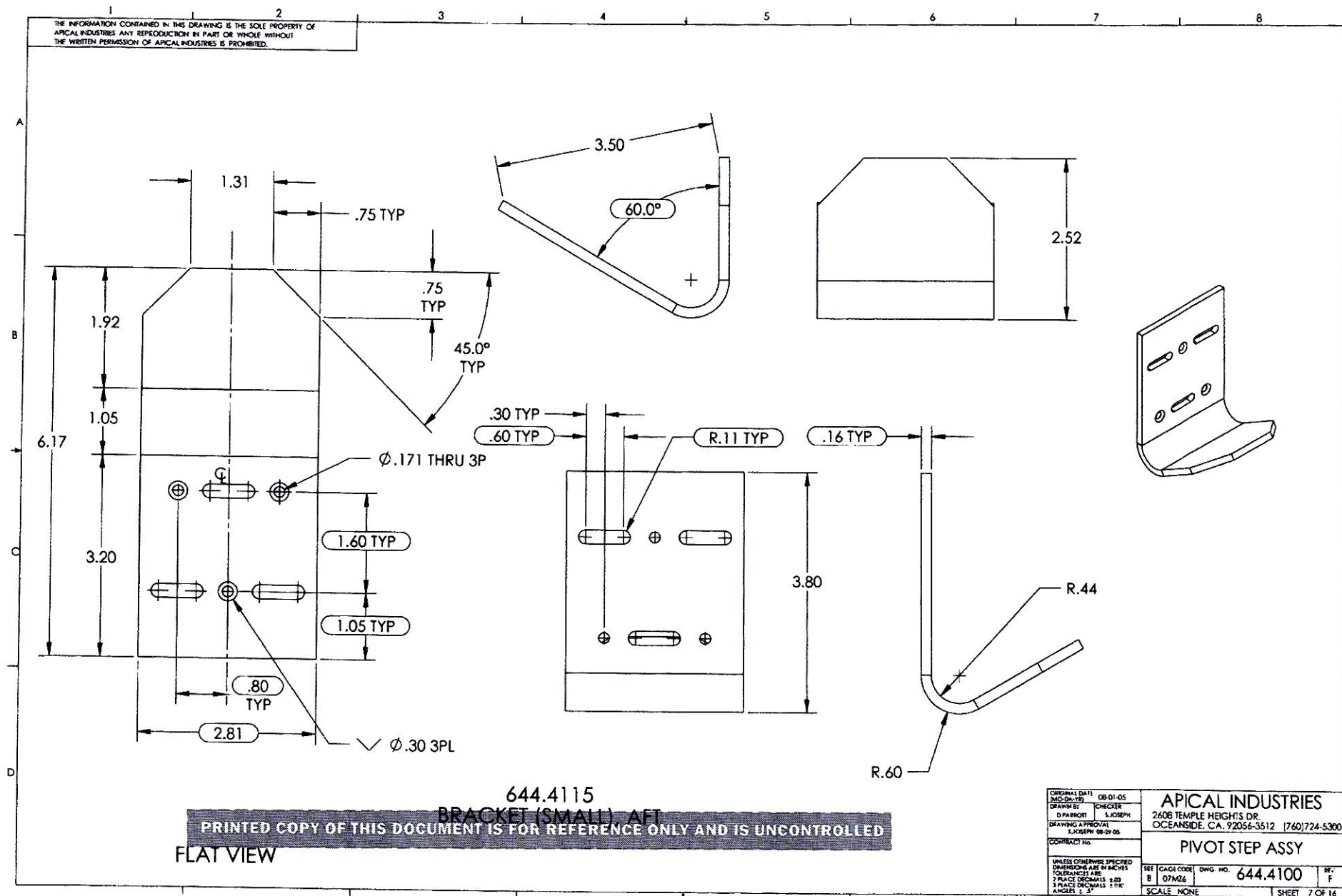
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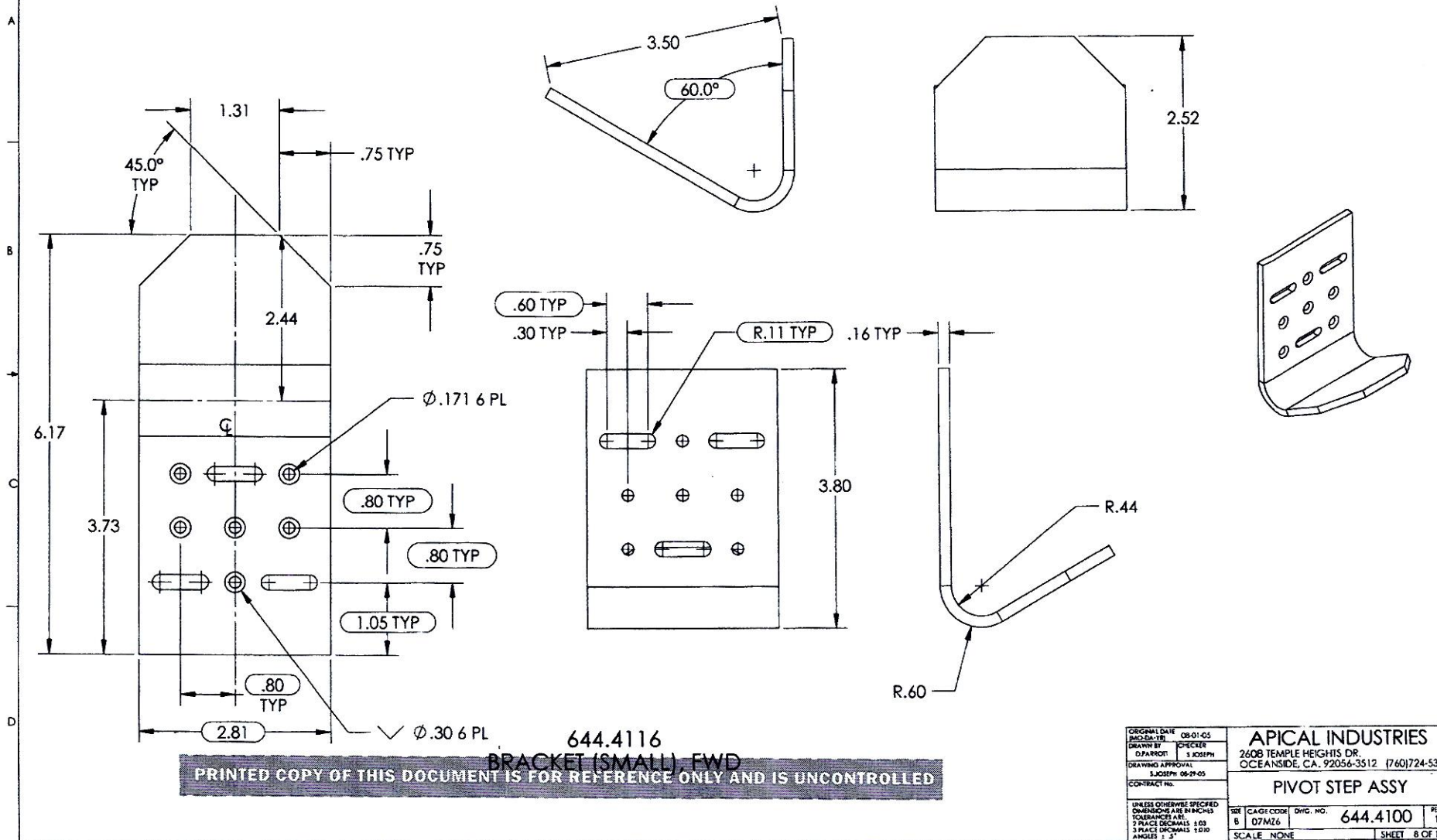
644.4114
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ORIGINAL DATE 08-01-05		APICAL INDUSTRIES	
DRAWN BY D. PARROTT	CHECKER S. JOSEPH	2608 TEMPLE HEIGHTS DR.	
DRAWING APPROVAL S. JOSEPH 08-29-05		OCEANSIDE, CA. 92056-3512 (760)724-5300	
CONTRACT NO.		PIVOT STEP ASSY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.010 ANGLES ±.5°		SST CAGE CODE B 07M26	DWG NO. 644.4100
SCALE NONE		SHEET 6 OF 16	

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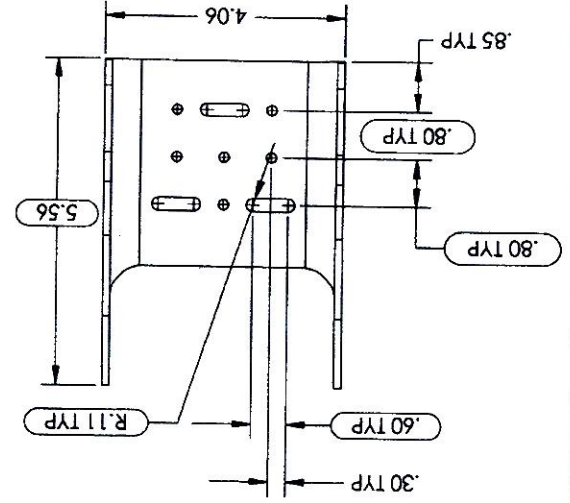
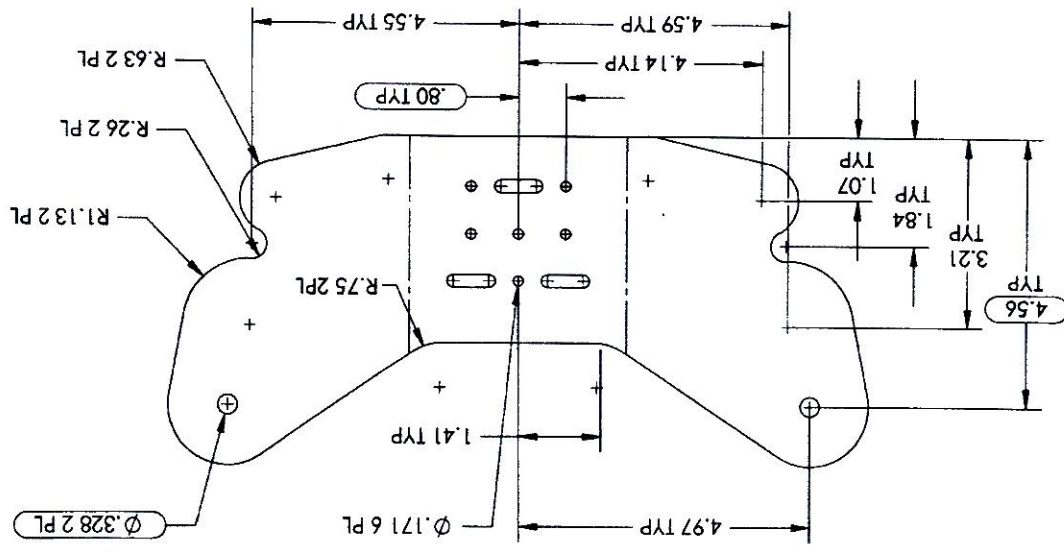
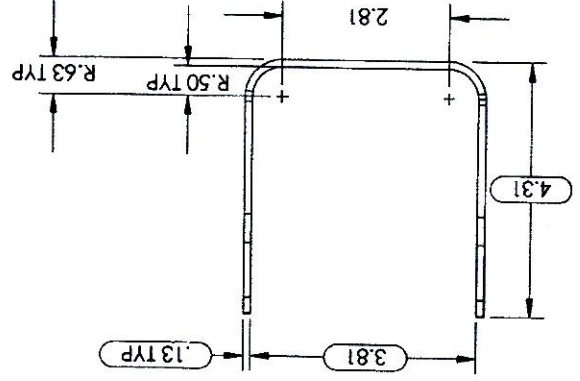
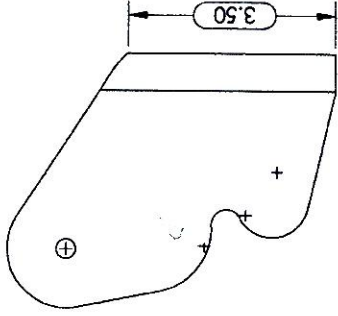
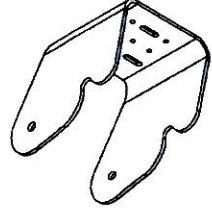


ORIGINAL DATE 08-01-05	APICAL INDUSTRIES		
DRAWN BY D. FARRITT	2608 TEMPLE HEIGHTS DR.		
CHECKER J. JOSEPH	OCEANSIDE, CA. 92056-3512 (760)724-5300		
DRAWING APPROVAL 8/10/05	PIVOT STEP ASSY		
CONTRACT NO.	REV. NO.	644.4100	REV. F
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 3 PLACE DECIMALS ±.03 ANGLES ±.5°	SCALE: NONE	SHEET 8 OF 16	

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BRACKET, FWD PIVOT

APICAL INDUSTRIES		OCEANSIDE, CA 92056-3512 (760)724-5300	
DRAWN BY: J. L. BROWN		CHECKED BY: J. L. BROWN	
DATE: 08-01-03		DATE: 08-01-03	
PROJECT: 1.000000		PROJECT: 1.000000	
DESCRIPTION: 1.000000		DESCRIPTION: 1.000000	
DRAWING APPROVAL: 1.000000		DRAWING APPROVAL: 1.000000	
SCALE: NONE		SCALE: NONE	
SHEET: 9 OF 16		SHEET: 9 OF 16	



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1 2 3 4 5 6 7 8

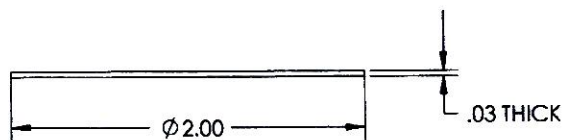
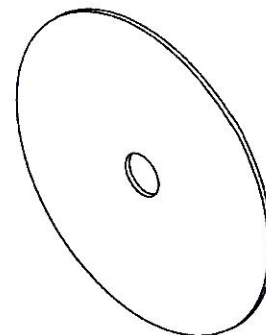
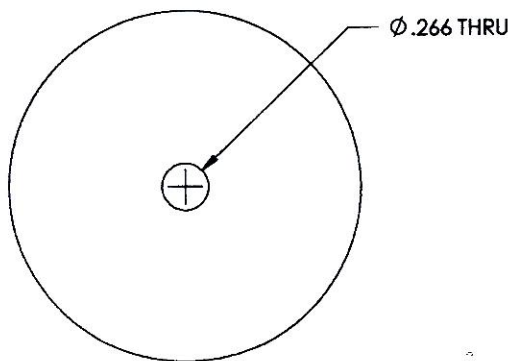
A

B

C

D

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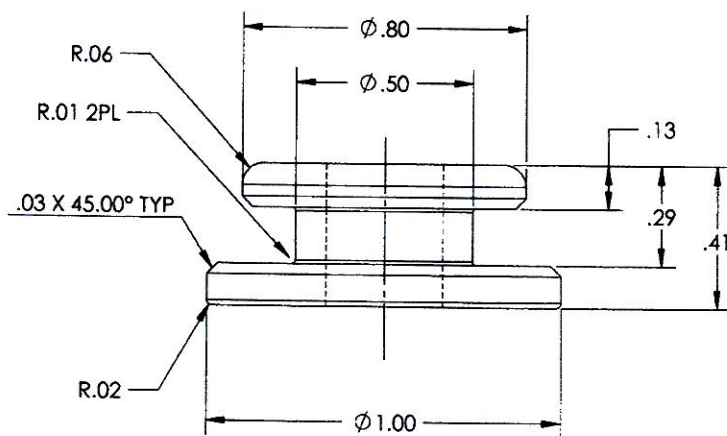
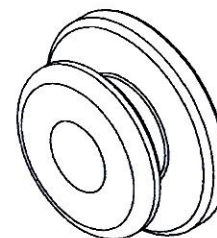
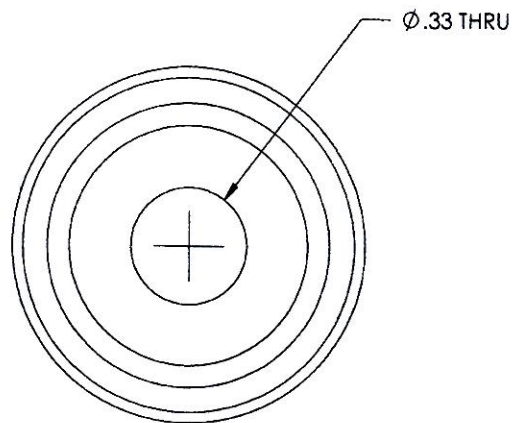


644.4118
WASHER, NYLON

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ORIGINAL DATE 1/10/04-10	08-01-05	APICAL INDUSTRIES	
DRAWN BY D. PARROTT	CHECKED S. JOSEPH	2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL S. JOSEPH 08-29-05	PIVOT STEP ASSY		
CONTRACT NO.			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.03 3 PLACE DECIMALS ±.010 ANGLES ±.5°	SER 8	CAGE CODE D7MA26	DWG. NO. 644.4100
SCALE NONE		SHEET 10 OF 16	

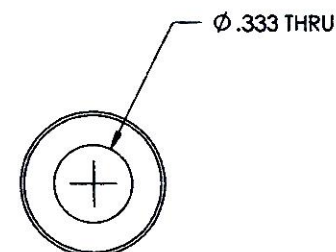
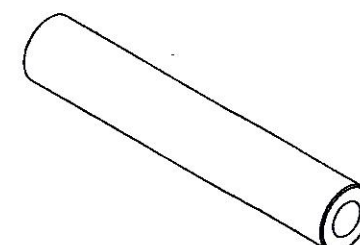
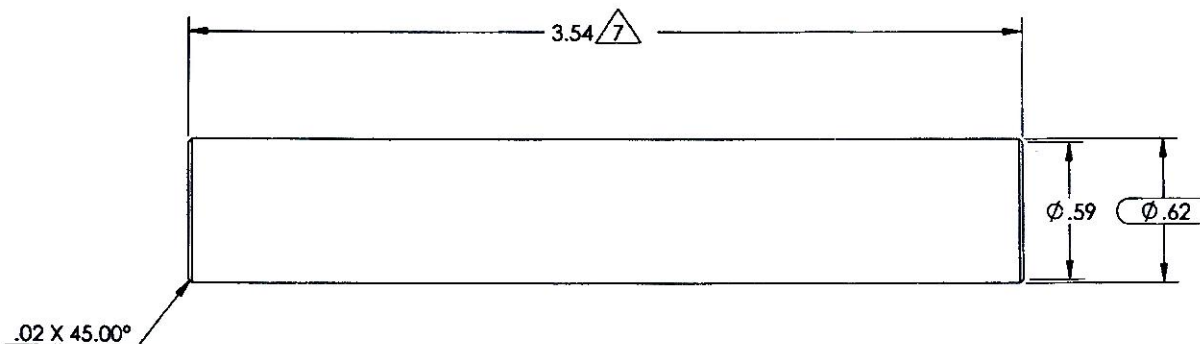
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644.4119
SPACER FWD STOP
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DRAWING APPROVAL: J. JOSEPH		OCEANSIDE, CA. 92056-3512 (760)724-5300	
CONTRACT NO.		PIVOT STEP ASSY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACES DECIMALS ±.00 3 PLACES DECIMALS ±.010 ANGLES 2°-3°		SER: B	REV: F
SCALE: NONE		DWG. NO: 644.4100	SHEET 11 OF 16

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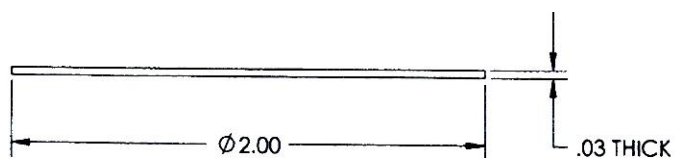
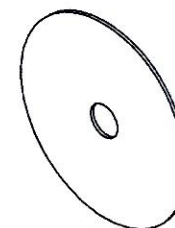
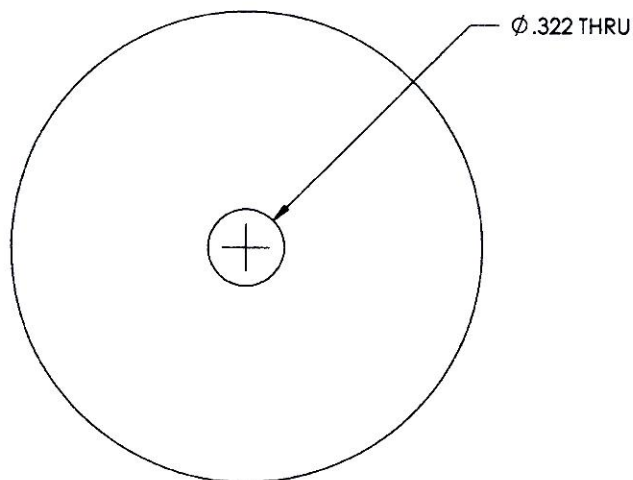


644.4120
SPACER, CROSS-TUBE

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ORIGINAL DATE: 05-01-05		APICAL INDUSTRIES	
DRAWN BY: D. PARSONS		2608 TEMPLE HEIGHTS DR.	
CHECKED BY: S. JOSEPH		OCEANSIDE, CA. 92056-3512 (760) 724-5300	
DRAWING APPROVAL: S. JOSEPH 05-29-05		PIVOT STEP ASSY	
CONTACT NO.		REV. F	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS 1.00 3 PLACE DECIMALS 0.010 ANGLES 0.5°		SHEET: 8	OF: 16
SCALE: NONE		644.4100	

1 2 3 4 5 6 7 8
A
B
C
D
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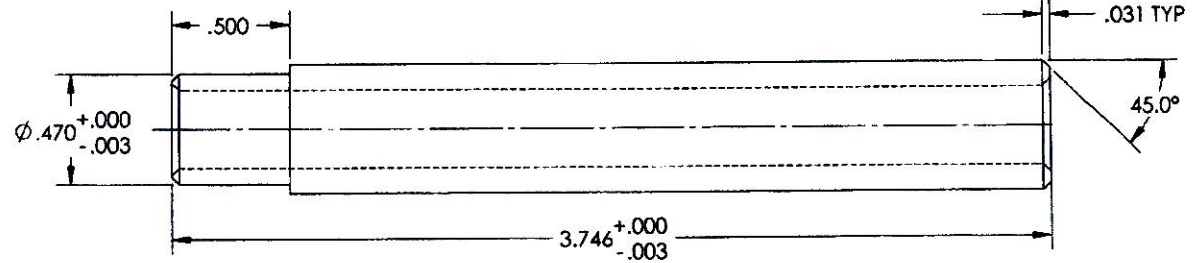
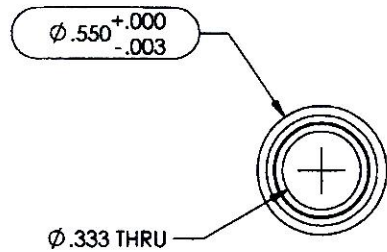
644.4121

WASHER, NYLON

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ORIGINAL DATE	06-01-05	APICAL INDUSTRIES	
MOD. DATE		2608 TEMPLE HEIGHTS DR.	
DRAWN BY	C. JOSEPH	OCEANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL	S. JOSEPH	PIVOT STEP ASSY	
CONTRACT NO.			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.05 3 PLACE DECIMALS ±.010 ANGLES ±.5°		SER. CAGE CODE	REV.
		B 07M26	F
		644.4100	
		SCALE NONE	SHEET 13 OF 16

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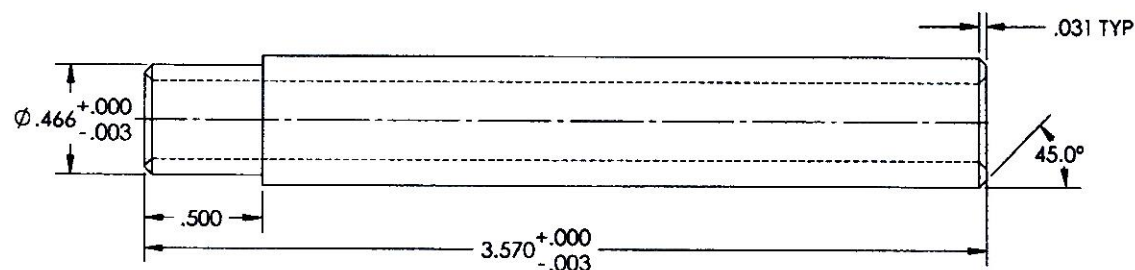
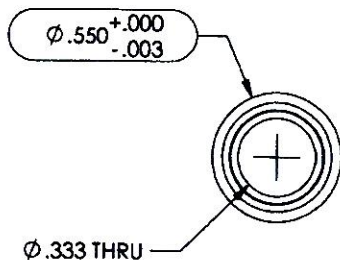


644.4122

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ORIGINAL DATE: 08-01-05		APICAL INDUSTRIES	
DRAWN BY: J. JOSEPH		2608 TEMPLE HEIGHTS DR.	
CHECKED BY: J. JOSEPH		OCEANSIDE, CA. 92056-3512 (760) 724-5300	
DRAWING APPROVAL: J. JOSEPH 08-29-05		PIVOT STEP ASSY	
CONTRACT NO.		SIZE: 07/MA16	DWG. NO. 644.4100
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 3 PLACE DECIMALS: .003 ANGLES: .5°		SCALE: NONE	SHEET 14 OF 16

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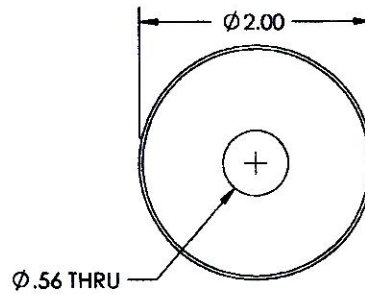
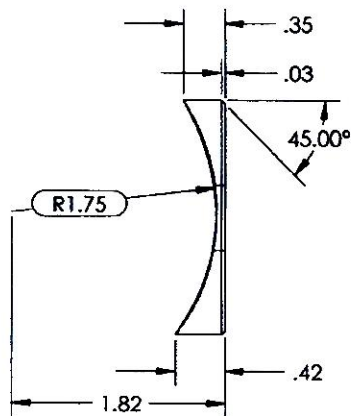


644.4123

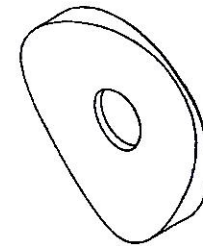
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ORIGINAL DATE 08-01-05		APICAL INDUSTRIES	
DRAWN BY D. PAUNOTT		2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL S. JOSEPH 08-29-05		PIVOT STEP ASSY	
CONTRACT NO.		REV. 8	REV. F
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.010 ANGLES ±.5°		SCALE: NONE	SHEET 15 OF 16

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644.4124



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ORIGINAL DATE: 08-01-00		APICAL INDUSTRIES	
DRAWN BY: CHUCKIE		2608 TEMPLE HEIGHTS DR.	
CHECKED BY: J. COHEN		OCEANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL: 08-29-00		PIVOT STEP ASSY	
CONTRACT NO.		REV: 1	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.010 3 PLACE DECIMALS ±.005 ANGLES ±.5°		SEE: CAGE CODE: 07M26	DWG. NO.: 644.4100
SCALE: NONE		SHEET 16 OF 16	



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO34919**

Purchase Order Date 1/12/2017

PO Print Date 1/12/2017

Page Number 1 of 2

Order From :

A.T.G. INDUSTRIES INC.
731 INDUSTRIELLE ROAD
ROCKLAND, ON K4K 1T2
CANADA

VC-ATG001

Ship To : DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA



JAN 12 2017

Contact Name

Vendor Phone 613-446-4544

Ship To Contact

Ship To Phone

Ship Via: VENDOR'S TRUCK

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Terms

Net 30

Currency

CAD

FOB

FCA - (Free Carrier)

Line Nbr	Reference Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
	Line Comments		Promise Date				
	Delivery Comments						
	154347	644.4117 BRACKET REV. F	1/17/2017		7.00	\$7.05	\$49.35
			Yes				
			1/17/2017				
		FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE 3 CLASS 2, COLOR BLACK					
						Line Total:	\$49.35
2	154281	644.4110 BRACKET REV. F	1/17/2017		7.00	\$7.05	\$49.35
			Yes				
			1/17/2017				
		FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE 3 CLASS 2, COLOR BLACK					
						Line Total:	\$49.35
3	154348	644.4111 BRACKET REV. F	1/17/2017		7.00	\$7.05	\$49.35
			Yes				
			1/17/2017				
		FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE 3 CLASS 2, COLOR BLACK					

PO Instructions: PRIMER IS SUPPLIED BY DART

Note:

1/12/2017



A.T.G. INDUSTRIES INC.
731 INDUSTRIELLE STREET
ROCKLAND, ON K4K 1T2
Canada

Ph: (613) 446-4544

Fax: (613) 446-4556

Pack List

Number: 912815

Date: 17-Jan-17

To

Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury, ON K6A 1K7

Ship To

CHANTAL LAVOIE
Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury, ON K6A 1K7

Ph: 613 632-9577

Fax: 613 632-1053

Ph: 613 632-9577

Fax: 613 632-1053

Terms		Ship Via	
Quantity	Description		
	PLEASE REFERENCE THE PACK LIST NUMBER ON ALL CORRESPONDENCE TO THIS SHIPMENT. IF YOU HAVE ANY QUESTIONS, PLEASE CALL AT (613) 446-4544.		
7 ea	Part: 644.4117 Bracket Job: 20580	Rev: F PO: 34919	Line: 1
7 ea	Part: 644.4110 Bracket Job: 20581	Rev: F PO: 34919	Line: 2
7 ea	Part: 644.4111 Bracket Job: 20582	Rev: F PO: 34919	Line: 3
1 ea	Part: ADMINISTRATION FEE ADMINISTRATION FEE Job: 20583	Rev: N/A PO: 34919	Line: 4
DATE: 17/01/2017			
CERTIFIED SIGNATURE:			
RECEIVER SIGNATURE: _____			
Note: This Packing Slip may contain parts that have been PLATED. Items that are plated may be subject to natural tarnishing and it is suggested that they be inspected within 24 hours of receipt.			
CERTIFICATE OF CONFORMANCE			
A.T.G. INDUSTRIES INC. CERTIFIES THAT ALL ITEMS IN THIS SHIPMENT CONFORM TO REQUIREMENTS.			
MADE IN CANADA.			



07 July 2014

Mr. Pat Smith
Director of Quality
DART Aerospace Hawkesbury
1270 Aberdeen St.
Hawkesbury, ON K6A 1K7

Mr. Smith:

The purpose of this letter is to provide no objection to an alternate means of finishing the metallic parts used as part of the Cable Cutters Kits designed under various STCs for the Airbus Helicopters AS350, EC135, EC145, Bell 206, 407, 212, 412 and AgustaWestland AW119 and AW139.

Many of the drawings currently call for a PRC-DESOTO PR-148 adhesion promoter prior to applying primer. Given the in-house testing conducted by DART Hawkesbury to determine the effectiveness of the adhesion promoter, we have no objection to removing the adhesion promoter from the finishing requirements listed on each drawing.

Feel free to reach out to me with any questions.

Regards,

A handwritten signature in dark ink, appearing to read "P. Bravo", with a stylized flourish at the end.

Pablo Bravo
Director of Engineering
DART Aerospace Oceanside (Apical Industries, Inc.)
(760) 724-5300
pbravo@dartaero.com